2004 Baseline Survey of **Bonner Branch**

Middle Pecatonica Watershed (SP08), Sugar/Pecatonica Basin

Lafayette County

WBIC 927000

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The Bonner Branch is a 17 mile long low gradient stream (18.2 ft/mile) that is a tributary to the Pecatonica River. The Lactaus Cheese Factory and Belmont wastewater treatment plant discharge to the stream. In 1967, a surface water inventory reported that Bonner Branch "provides one(sic) of the best fishing in this part of the county." Since then, numerous fish kills have plagued the stream over the years. The cause of the fish kills varied from point source discharges, manure spills (1993 and 1999), and leaking slurry tanks (1994). Subsequent surveys conducted after these kills showed the presence of fewer fish species.

On September 27th and 28th, 2004 a survey was conducted at three sites on Bonner Branch: Upstream from County Highway O, upstream from CTH G, and upstream from Spring Street in the Village of Belmont. Fish surveys were conducted at each site and a habitat evaluation and macroinvertebrate sample was taken at the CTH G site. Each fish survey was conducted using a 240 volt D.C. stream shocker with 2 probes. All fish species were collected in order to determine an Index of Biotic Integrity (IBI).

County Highway O

Bonner Branch at this site averaged approximately 7 meters wide and had an average depth of approximately 1 meter. The water temperature was 12^{o}C. The stream runs through an old pasture that is fairly well buffered. Current agriculture is at least 70-100 meters from the stream. The stream banks vary from 5-8 feet high with the inner bend containing reed canary grass, but the outer banks were steep and raw. There were few meanders and the bottom substrate varied from gravel/cobble riffles to silt and gravel in runs.

Three hundred and thirty one meters of stream were shocked. The following non-game species were collected:

Species	**Number**
Fantail Darter	89
Hornyhead Chub	92
Johnny Darter	20
Common Shiner	134
Creek Chub	8
White Sucker	162
Stonecat	3
Northern Redbelly Dace	2
Bluntnose Minnow	42
Central Stoneroller	27
Banded Darter	17
Blackside Darter	1
Suckermouth Minnow	11
Greater Redhorse	21
Green Sunfish	6

Additionally, the following game and panfish species were collected:

Species	Size (in.)	Species	Size (in.)	Species	Size (in.)
Largemouth Bass	2.9	Bluegill	4.4	Bluegill	2.2
Largemouth Bass	2.8	Bluegill	4.2	Bluegill	4.9
Smallmouth Bass	5.2	Bluegill	4.5	Black Crappie	7.9
Smallmouth Bass	5.4	Bluegill	5.4	Black Crappie	7.7
Bluegill	5.1	Bluegill	4.6	Orange-spotted Sunfish	3.0
Bluegill	2.6	Bluegill	3.4	Orange-spotted Sunfish	2.7

The warm-water IBI for this site was 64 (good).

County Highway G

The stream has an average width of 4.0 meters at this site with an average depth of approximately 0.35 meters. A habitat and macroinvertebrate evaluation were conducted at this site but summary results are not available at this time. The steam flow was 5.08 ft^3/second (0.144 m^3/sec). The stream is well buffered as it flows through an old pasture and meadow and is bounded along the right upstream bank by the Pecatonica Trail. The stream bottom was rubble cobble and gravel. There were some patches of coontail and curlyleaf pondweed. Bank height varies from 0 to 5 feet with the inside banks being low and grassy and the outside banks high, steep and raw.

Two hundred and eighteen meters were shocked and the following fish were collected:

Species	Number
Southern Redbelly Dace	327
Hornyhead Chub	272
Central Stoneroller	539
Common Shiner	557
White Sucker	95
Creek Chub	34
Fantail Darter	345
Bluntnose Minnow	202
Johnny Darter	14
Brook Stickleback	4
Bigmouth Shiner	1
Pearl Dace	1
Brassy Minnow	2

The warm-water IBI for this site is 37 (fair).

Upstream from Spring Street in the Village of Belmont

The section of stream is on the western edge of Belmont where it is essentially a part of an urban environment, but is also impacted by the agricultural land use immediately upstream from this stretch. The stream is approximately 2.5 meters wide with an average depth of about 0.3 meters. The bottom substrate is varied, with an old mill wall impounding sediment for about 60-70 meters upstream from Spring Street. Upstream from this point, the bottom is mostly gravel. Streambanks were 5 to 10 feet high and fairly raw.

One hundred sixty five meters were shocked and the following fish were collected:

Species	**Number**
Fantail Darter	26
Johnny Darter	34
Sand Shiner	36
Bluntnose Minnow	8
Hornyhead Chub	5
Brook Stickleback	11
White Sucker	62
Central Stoneroller	67
Common Shiner	225
Creek Chub	42
Southern Redbelly Dace	73

The warmwater IBI score for this site is 42 (fair).

Summary
The number and diversity of fish species found at all three sites generally reflected the quality of the habitat and the watershed. It should be noted that this survey was conducted near the end of a cool, wet summer. The entire length of Bonner Branch is classified as a Warm Water Sport Fishery (Diverse Fish and Aquatic Life – Gamefish waters). In addition to the fish kills that have plagued the stream, habitat and stream size may be a limiting factor in allowing the stream to hold numbers of adult game fish. A look at historical records (i.e. Fago) shows that game species are found only intermittently. The section of stream above Belmont does not have the size or habitat characteristics necessary to hold game species. One would expect there would be more game species downstream from the confluence of Cottage Inn Branch, however a lack of fish holding habitat and the featureless U-shaped channel limit the streams ability to recruit and hold more fish. The stream has the potential to be good for smallmouth bass reproduction as these waters could be a good nursery for young fish.

Management Recommendations:
Employ agricultural best management practices in the watershed to mitigate nonpoint source pollution.

Slope and stabilize stream banks along the length of the stream.

Add habitat such as anchored logs and/or boulders to the larger, deeper sections of stream – downstream from junction with Cottage Inn Branch.

Attempt to better document impacts from fish kills or low dissolved oxygen levels in limiting the potential of the stream. Deploy Sonde devices in spring and summer for 1 to 2 week periods.

Review classification of the stream to determine realistic potential for the stream (forage fish vs. sport fish) and evaluate whether this stream should be added to the state's list of impaired waters [303(d)].